REMARKS/ARGUMENTS

Claims 1-74 were pending in the present application before the amendment as set forth above. Of them, claims 1-35 were under examination and claims 36-74 were withdrawn as directed to non-elected subject matter. By this amendment, as set forth above, claims 1, 2, 4, 6, 9-11, 13, 15, 16, 18, 22, 23, 25-28 and 31-34 are amended, claim 3 is canceled, and new claims 75 and 76 are added.

In the December 3, 2007 Office Action, claims 5, 9-11, 13, 15, 16, 18, 22, 23, 25-28 and 31-34 were rejected under 35 U.S.C. §112, second paragraph.

Furthermore, claims 1, 3, 4, 6-9, 12-15, 17, 20, 21-31 and 35 were rejected under 35 U.S.C. §102(b) as being anticipated by Cepak et al (Preparation of Polymeric Micro- and Nanostructures Using a Template-Based Deposition Method, Chem. Mater., 1999, 11, 1363-1367) (hereinafter "Cepak"). Claims 1, 2, 7, 8, 12-17 and 20-35 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,478,994 to Sneddon et al. (hereinafter "Sneddon"). Claims 3-6 were rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Sneddon.

Moreover, claims 1, 3, 4, 6-9, 12-15, 17, 18, 20, 21-23 and 35 were rejected under 35 U.S.C. §103(a) as being obvious over Cepak in view of U.S. Pat. No. 5,292,515 to Moro et al. (hereinafter "Moro"). Claims 5 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Cepak, as applied to claims 1, 3, 4, 6-9, 12-15, 20, 21-31 and 35 above. Claims 9-11 were rejected under 35 U.S.C. §103(a) as being obvious over Sneddon, as applied to claims 1, 2, 7, 8, 12-17 and 20-35 above. Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over Cepak in view of Moro, as applied to claims 1, 3, 4, 6-9, 12-15, 20, 21-31 and 35 above, and further in view of either U.S. Pat. No. 4,004,167 to Meckling (hereinafter "Meckling") or U.S. Pat. No. 3,607,998 to Goodridge (hereinafter "Goodridge"). Claim 19 was also rejected under 35 U.S.C. §103(a) as being unpatentable over Sneddon in view of Moro, as applied to claim 18 above, and further in view of either Meckling or Goodridge.

Additionally, the specification was objected to because of the informalities.

Applicant appreciates very much the Examiner's careful review of the instant application.

In response, as set forth above, claims 1, 2, 4, 6, 9-11, 13, 15, 16, 18, 22, 23, 25-28 and

31-34 have been amended to correct the informalities. New claims 75 and 76 have been introduced to conform claims to the embodiments of the present invention and disclosed in the specification, as originally filed.

Additionally, without acquiescing in the propriety of the Examiner's rejections and to facilitate the prosecution of the current application, claim 3 has been canceled, which makes the Examiner's rejections under 35 U.S.C. §102 and §103 to claim 3 moot.

Moreover, the specification has been amended for better form so that the written description, claims, and drawings are consistent with each other.

Support for the amendment set forth above can be found in the claims and the disclosure as originally filed. Applicant asserts that no new matter is added.

Any amendments to the claims not specifically referred to herein as being included for the purpose of distinguishing the claims from cited references are included for the purpose of clarification, consistence, and/or grammatical/spelling correction only.

It is now believed that the application is in condition for allowance and such allowance is respectfully requested.

The following remarks herein are considered to be responsive thereto.

Specification Objection

In the Office Action, the specification was objected to because of the informalities.

In response, as set for above, the specification has been amended. Specifically, a corresponding section heading has been added for each section of the specification, according to the Examiner's suggestions. Accordingly, the specification objection is now overcome.

Claim Rejections under 35 U.S.C. §112

Claims 5, 9-11, 13, 15, 16, 18, 22, 23, 25-28 and 31-34 were rejected under 35 U.S.C. §112, second paragraph, in the Office Action.

In response, as set for above, claims 1, 2, 4, 6, 9-11, 13, 15, 16, 18, 22, 23, 25-28 and 31-34 have been amended for better form. More specifically, claims 1 and 2 have been amended to incorporate the limitation of claim 3 that is canceled in the amendment, which makes the

recitation of "the melt" in claim 11 anteceded. Claims 1 and 2 have also been amended to correct the informalities. Claims 9, 10, 15, 16, 18, 22, 23 and 25-28 have been amended to remove the corresponding narrow range or limitations that falls within the broad range or limitations. Claim 11 has been amended to delete the word "filled". Claim 13 has been amended to correct a typo. Claims 31-34 have been amended to correct the informalities.

Accordingly, applicant believes that the claim rejections under 35 U.S.C. §112 to claims 9-11, 13, 15, 16, 18, 22, 23, 25-28 and 31-34 are now overcome.

Additionally, applicant respectfully submits that the limitation of "***a temperature*** which ***is at least 30% above the solidification temperature*** of the polymer or the polymer mixture" recited in claim 5 is clearly defined, which is in compliance with the requirement of 35 U.S.C. §112, second paragraph. The unit of the temperature is inherently same as the unit of the solidification temperature. Therefore, applicant respectfully requests the claim rejection under 35 U.S.C. §112 to claim 5 be withdrawn.

Claim Rejections under 35 U.S.C. §102

In the Office Action, claims 1, 3, 4, 6-9, 12-15, 17, 20, 21-31 and 35 were rejected under 35 U.S.C. §102(b) as being anticipated by Cepak. Claims 1, 2, 7, 8, 12-17 and 20-35 were rejected under 35 U.S.C. §102(e) as being anticipated by Sneddon. Claims 3-6 were rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Sneddon. Applicant respectfully traverses the rejections made by the Examiner at least for the reasons set forth below:

Claim 1, as amended, recites a process for the production of hollow fibers with an external diameter from 10 nm to 100 μm, which contain at least one polymer. The process includes the steps of:

"(a) providing a porous template material;

(b) introducing a liquid containing ***at least one polymer*** into the pores of the template material in a manner such that the pore walls are wetted by the liquid, but the pores are not completely filled with the liquid, wherein ***the liquid is introduced into the pores as a melt of a polymer or a mixture of polymers***, which optionally

contains further additives;

(c) solidifying the liquid; and

(d) optionally at least partially removing the template material." (Emphasis added.)

Claim 2, as amended, recites a process for the production of hollow fibers of nonpolymeric materials with external diameters from 10 nm to 100 μm. The process has the steps of:

"(a) providing a porous template material;

(b) introducing a liquid containing ***at least one polymer*** and at least one nonpolymeric material into the pores of the template material in a manner such that the pore walls are wetted by the liquid, but the pores are not completely filled with the liquid, wherein ***the liquid is introduced into the pores as a melt of a polymer or a mixture of polymers***, which optionally contains further additives;

(c) solidifying the liquid;

(d) selectively at least partially removing the polymeric components;

(e) optionally chemically converting the at least one nonpolymeric material remaining in the pores; and

(f) optionally at least partially removing the template material." (Emphasis added.)

However, as shown in Cepak, and understood by applicant, Cepak refers to the preparation of polymeric micro- and nanostructures using a template-based deposition method. In detail, the preparation entails vacuum filtration of a solution of the desired polymer into the pores of a microporous template membrane, removing the membrane from the vacuum, and dissolving the membrane in a suitable solvent to free the tubules or fibrils that have been deposited within the pores. Cepak may obtain polymeric tubules having an outside diameter of between 400 nm to 1 μm.

In contrast to the Examiner's assertion (cf. page 11 of the Office Action), Cepak does not disclose a method for preparing ***hollow fibers*** by ***introducing a melt of a polymer or a mixture of polymers into the pores of a porous template material***, but rather mentions the preparation of polyethylene ***fibrils*** by melting polyethylene into the pores of an alumina template membrane. In view of fibrils being solid fibers, Cepak does not disclose, teach, or suggest the processes for

the production of hollow fibers that are recited in independent claims 1 and 2, respectively.

Additionally, Sneddon discloses a method for making a boron carbide containing ceramic, which involves pyrolyzing a precursor compound having one or more monosubstituted decaboranyl groups and at least one substituting group containing carbon. For this purpose, a porous alumina template membrane is immersed in the solution or melt of a polymeric precursor (e.g. polyhexenyldecaborane or a copolymer obtained by copolymerization of hexenyldecaborane and allyltrimethylsilane), whereby the polymeric precursor is drawn into the pores of the template membrane by capillary action. After the pores are filled with the polymeric precursor, the precursor segments are pyrolyzed by heating, as a result, boron carbide nanofibers together with a small amount of hollow fiber structures are obtained.

In other words, Sneddon requires pyrolysis of the polymeric precursor to form fibers consisting of boron carbide (Sneddon, col. 7, line 27 to column 8, line 9). However, pyrolysis of the polymeric precursor results in the precursor's breakdown. As can be derived from the above text passage, pyrolysis of, for example, polyhexenyldecaborane yields boron carbide, heptane and hydrogen, with heptane and hydrogen evaporating at the pyrolysis temperature (500°C to 2500°C). Thus, Sneddon does not disclose, teach or suggest a process of making hollow fibers that require ***at least one polymer***, as claimed in independent claims 1 and 2, respectively. Furthermore, Sneddon does not disclose, teach or suggest the step of introducing ***a melt of at least one polymer and at least one nonpolymeric material*** into the pores of the porous template membrane, as recited in independent claims 1 and 2, respectively.

Therefore, neither Cepak nor Sneddon, taken alone or in combination, discloses, teaches or suggests a process of making hollow fibers as claimed in independent claims 1 and 2. For at least the foregoing reasons, independent claims 1 and 2, as amended, are patentable under 35 U.S.C. § 102 and/or § 103 over Cepak and Sneddon.

Accordingly, claims 4, 6-9, 12-17, 20 and 21-35, which depend from now allowable amended claim 1 or 2, are patentable at least for this reason.

Claim Rejections under 35 U.S.C. §103

In the Office Action, claims 1, 3, 4, 6-9, 12-15, 17, 18, 20, 21-23 and 35 were rejected

under 35 U.S.C. §103(a) as being obvious over Cepak in view of Moro. Claims 5 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Cepak, as applied to claims 1, 3, 4, 6-9, 12-15, 20, 21-31 and 35 above. Claims 9-11 were rejected under 35 U.S.C. §103(a) as being obvious over Sneddon, as applied to claims 1, 2, 7, 8, 12-17 and 20-35 above. Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over Cepak in view of Moro, as applied to claims 1, 3, 4, 6-9, 12-15, 20, 21-31 and 35 above, and further in view of either Meckling or Goodridge. Claim 19 was also rejected under 35 U.S.C. §103(a) as being unpatentable over Sneddon in view of Moro, as applied to claim 18 above, and further in view of either Meckling or Goodridge. Applicant respectfully traverses the rejection made by the Examiner at least for the reasons set forth below:

As set forth above, Cepak teaches vacuum filtration of a solution of a desired polymer into the pores of a suitable template membrane, the method being applicable to any polymer that can be dissolved in a solvent that is compatible with the porous template membranes employed. Thus, Cepak requires ***a device for generating vacuum and a solvent for dissolving the desired polymer***. Regardless of the fact that removal of the solvent is time-consuming and requires a number of safety measures, evaporation of the solvent by using a vacuum device proceeds both fast and uncontrolled, resulting in phase separation processes and uncontrolled formation of polymer-rich and solvent-rich regions. Further evaporation of solvent from solvent-rich regions of the fibers leads to the formation of defects such as pores and holes. However, according to the present invention, these problems are overcome by refraining from using a vacuum device and employing polymer melts for filling the pores of the template membrane.

Additionally, it should be pointed out that the method of Sneddon requires the porous template membrane to be ***immersed in a liquid precursor bath***. After the pores are filled with the polymeric precursor, the templates are pyrolyzed in a tube furnace under a flow of argon to about 1000°C at 10°/min and held at this temperature for three hours to form predominantely solid nanofibers (cf. Example 5). The additional occurrence of a small amount of nanocylindrical structures, however, is not a result of incomplete filling of a channel in the template, as proposed in column 15, lines 13-16 of Sneddon. Instead, the real reason for formation of such hollow fibers is shrinkage caused by the pyrolysis step. Thus, Sneddon clearly

teaches away from the present invention.

Therefore, none of Cepak, Sneddon, Moro, Meckling and Goodridge, taken alone or in combination, discloses, teaches or suggests a process of making hollow fibers as claimed in independent claim 1. For at least the foregoing reasons, independent claim 1, as amended, is also patentable under 35 U.S.C. § 103 over Cepak, Sneddon, Moro, Meckling and Goodridge.

Accordingly, claims 4-35, which depend from now allowable amended claim 1, are patentable at least for this reason.

New Claims 75 and 76

New claim 75, which depends from now allowable claim 15, and new claim 76, which depends from now allowable claim 1 or 2, are also patentable.

CONCLUSION

Applicant respectfully submits that the foregoing Amendment and Response place this application in condition for allowance. If the Examiner believes that there are any issues that can be resolved by a telephone conference, or that there are any informalities that can be corrected by an Examiner's amendment, please call the undersigned at 404.495.3678.

Respectfully submitted,

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